current signal generated by the photodetector and providing a dc voltage signal; and

a comparator coupled to the current to voltage circuit, the comparator receiving the dc voltage signal and providing a loss of signal signal.

2. The loss of signal circuit of claim 1 wherein the current to voltage circuit comprises a current mirror receiving the dc current signal and providing an intermediate DC voltage signal.

3. The loss of signal circuit of claim 2 wherein current mirror includes transistors, and at least some of the transistors receive a substrate drive signal.

4. The loss of signal circuit of claim 3 wherein the substrate drive signal is provided by a process and temperature sensor.

5. (Amended) A loss of signal circuit in an opto-electronic receiver, the opto-electronic receiver having a transimpedance amplifier ac coupled to a photodetector, the loss of signal circuit comprising:

a current to voltage circuit dc coupled to the photodetector, the current to voltage circuit receiving a dc current signal generated by the photodetector and providing a dc voltage signal, the current to voltage circuit comprising a current mirror receiving the dc current signal and providing an intermediate dc voltage signal, the current mirror including transistors, and at least some of the transistors receive a substrate drive signal provided by a process and temperature sensor, the process and temperature sensor comprising a resistor and a transistor, the resistor coupled to the drain of the

transistor and the substrate drive signal being formed at the drain of the transistor; and

a comparator coupled to the current to voltage circuit, the comparator receiving the dc voltage signal and providing a loss of signal signal.

6. The loss of signal circuit of claim 5 wherein the current mirror is a cascoded current mirror.

7. The loss of signal circuit of claim 6 further comprising sub-threshold current compensator transistor coupled to the current mirror.

8. A opto-electronic receiver comprising:

a photodetector;

a signal amplifier ac coupled to the photodetector; and

a loss of signal circuit dc coupled to the photodetector.

9. The opto-electronic receiver of claim 8 wherein the signal amplifier comprises a transimpedance amplifier.

10. The opto-electronic receiver of claim 9 wherein the loss of signal circuit comprises a current to voltage circuit receiving a dc current signal and generating a dc voltage signal and a comparator comparing the dc voltage signal to a reference signal.

11. An apparatus for generating a Loss Of Signal (LOS) signal for a photodetector circuit included in an opto-electronic receiver, the photodetector circuit being AC coupled to an amplifier stage included in the opto-electronic receiver, the photodetector circuit generating a DC signal responsive to an optical signal, the apparatus comprising:

a current to voltage converter circuit receiving the DC signal from the photodetector circuit, the current to voltage converter circuit generating a voltage signal in response to the DC signal; and

a comparator circuit receiving the voltage signal from the current to voltage converter circuit, the comparator circuit generating a LOS signal in response to the voltage signal.

12. (Amended) An apparatus for generating a Loss Of Signal (LOS) signal for a photodetector circuit included in an opto-electronic ~~receiver, the photodetector circuit being AC coupled to an amplifier~~ stage included in the opto-electronic receiver, the photodetector circuit generating a DC signal responsive to an optical signal, the apparatus comprising:

a current to voltage converter circuit receiving the DC signal from the photodetector circuit, the current to voltage converter circuit generating a voltage signal in response to the DC signal, the current to voltage converter comprising:

a current mirror circuit receiving the DC signal, the current mirror circuit generating an intermediate current signal in response to the DC signal;

a load resistor operably coupled to the current mirror circuit, the intermediate current signal flowing through the load resistor generating an intermediate voltage signal; and

a voltage buffer circuit receiving the intermediate voltage signal, the voltage buffer circuit generating the voltage signal; and

a comparator circuit receiving the voltage signal from the current to voltage converter circuit, the comparator circuit generating a LOS signal in response to the voltage signal.

13. The apparatus of claim 12, wherein the current to voltage converter circuit further includes a process and temperature sensor circuit generating a temperature and process compensation signal received by the current mirror circuit.

14. The apparatus of claim 11, further comprising a translator circuit receiving the LOS signal from the comparator circuit, the translator circuit generating an adjusted LOS signal from the LOS signal.

15. The apparatus of claim 11, the comparator circuit further including:

a reference voltage generator circuit, the reference voltage generator circuit generating a reference voltage signal; and

a comparison stage receiving the reference voltage signal and the voltage signal, the comparison stage generating the LOS signal by comparing the voltage signal to the reference voltage signal.

16. (Amended) A method for generating a Loss Of Signal (LOS) signal for a photodetector circuit included in an opto-electronic receiver, the photodetector circuit AC coupled to an amplifier stage included in the opto-electronic receiver, the photodetector circuit generating a DC signal responsive to an optical signal, the method comprising:

providing a current to voltage converter circuit operably coupled to the photodetector circuit;

providing a comparator circuit operably coupled to the current to voltage converter circuit;

receiving by the current to voltage converter circuit from the photodetector circuit the DC signal;

generating by the current to voltage converter circuit a voltage signal in response to the DC signal;

receiving by the comparator circuit from the current to voltage converter circuit the voltage signal; and

generating by the comparator circuit from the voltage signal a LOS signal.

17. (Amended) A method for generating a Loss Of Signal (LOS) signal for a photodetector circuit included in an opto-electronic receiver, the photodetector circuit AC coupled to an amplifier stage ~~included in the opto-electronic receiver, the photodetector circuit~~ generating a DC signal responsive to an optical signal, the method comprising:

providing a current to voltage converter circuit operably coupled to the photodetector circuit, the current to voltage converter circuit comprising a current mirror circuit operably coupled to a load resistor and a voltage buffer circuit;

providing a comparator circuit operably coupled to the voltage buffer circuit of the current to voltage converter circuit;

receiving by the current mirror circuit of the current to voltage converter circuit from the photodetector circuit the DC signal;

generating by the current mirror circuit an intermediate current signal in response to the DC signal;

generating an intermediate voltage signal by flowing the intermediate current signal through the load resistor;

receiving by the voltage buffer circuit the intermediate voltage signal;

generating by the voltage buffer circuit a voltage signal;

receiving by the comparator circuit from the voltage buffer circuit the voltage signal; and

generating by the comparator circuit from the voltage signal a LOS signal.

18. The method of claim 17, wherein the current to voltage converter circuit further includes a process and temperature sensor circuit, the method further comprising:

generating by the process and temperature sensor circuit a temperature and process compensation signal;

receiving by the current mirror circuit the temperature and process compensation signal; and

generating by the current mirror circuit the voltage signal using the temperature and process compensation signal and the current signal.

19. The method of claim 16, further comprising:

providing a translator circuit operably coupled to the comparator circuit;

receiving by the translator circuit the LOS signal from the comparator circuit, the translator circuit generating an adjusted LOS signal from the LOS signal.

20. The method of claim 16, further comprising:

providing a reference voltage generator circuit and a comparison stage operably coupled to the reference voltage generator circuit included in the comparator circuit, the method further comprising

generating by the reference voltage generator circuit a reference voltage signal;

receiving by the comparison stage the reference voltage signal;

receiving by the comparison stage from the current to voltage converter circuit the voltage signal; and

generating by the comparison stage the LOS signal by comparing the voltage signal to the reference voltage signal.

21. An apparatus for generating a Loss Of Signal (LOS) signal for a photodetector circuit included in an opto-electronic receiver, the photodetector circuit AC coupled to an amplifier stage included in the opto-electronic receiver, the photodetector circuit generating a DC signal responsive to an optical signal, the apparatus comprising

current to voltage converter means operably coupled to the photodetector circuit for generating a voltage signal in response to the DC signal; and

comparator means operably coupled to the current to voltage converter means for generating a LOS signal in response to the voltage signal.

Q1 Cont'd

22. (Amended) An apparatus for generating a Loss Of Signal (LOS) signal for a photodetector circuit included in an opto-electronic receiver, the photodetector circuit AC coupled to an amplifier stage included in the opto-electronic receiver, the photodetector circuit generating a DC signal responsive to an optical signal, the apparatus comprising

current to voltage converter means operably coupled to the photodetector circuit for generating a voltage signal in response to the DC signal, comprising:

current mirror means for generating an intermediate current signal in response to the DC signal;

resistor means operably coupled to the current mirror means for generating an intermediate voltage signal in response to the intermediate current signal; and

voltage buffer means operably coupled to the resistor means for generating a voltage signal from the intermediate voltage signal; and

comparator means operably coupled to the current to voltage converter means for generating a LOS signal in response to the voltage signal.

23. The apparatus of claim 21, wherein the current to voltage converter means further includes a process and temperature sensor means operably coupled to the current mirror means for generating a temperature and process compensation signal received by the current mirror means.

24. The apparatus of claim 21, further comprising a translator means operably coupled to the comparator means for generating an adjusted LOS signal from the LOS signal.

25. The apparatus of claim 21, the comparator means further including:

reference voltage generator means for generating a reference voltage signal; and

comparison means operably coupled to the reference voltage generator means for comparing the voltage signal to the reference voltage signal.

Q1 Cont

REMARKS

Claims 1-25 are pending in this application. In the Office action mailed January 23, 2003, claim 16 is objected to because of an informality. Claims 5-7, 12, 13, 17, 18, and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 1-4, 8-11, 16, 21, and 23 stand rejected under U.S.C. 103(a) as being unpatentable over Geller (U.S. Patent 5,202,553) in view of Lim (U.S. Patent 5,329,115) and further in view of Lemon et al. (U.S. Patent 5,953,690). Claims